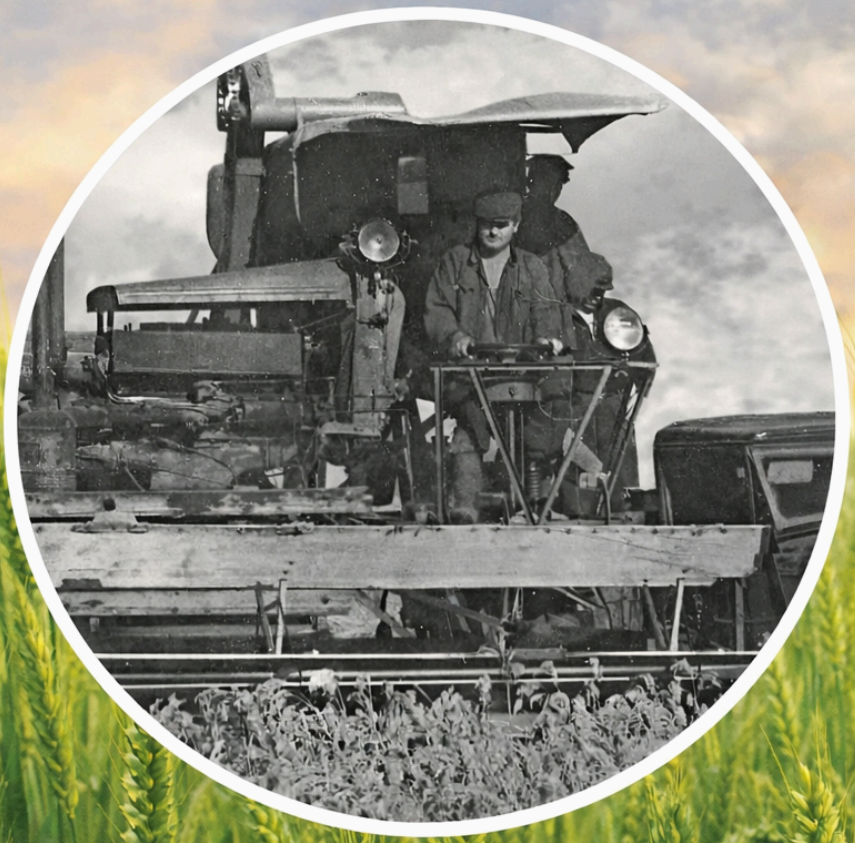
Virgin Land Development in the USSR:

Showcasing the Power of Collective Labour through Youth Mobilization



Indrajit Roy, Toronto, March 2026

Introduction

In the Soviet Union, household-based peasant farming ceased to exist as the dominant agricultural system following collectivization that began in the early 1930s. But it wasn't entirely abolished. Rural families were still allowed small private plots (личные подсобные хозяйства) adjacent to their homesteads for personal use where they could grow vegetables, potatoes and reared small livestock. The state took upon itself the role of food production, food supply and providing food security to its people. Soviet agriculture was reorganized into collective farms (Kolkhozes) and state farms (Sovkhozes) on nationalized land. To boost production and productivity of farm production, the Soviet government implemented many large-scale development projects in the agriculture sector. These projects also had a focus on development of physical infrastructure and other facilities for spurring economic development and improving people's livelihoods in places close to project locations. One such project was "Development of virgin and fallow lands (Освоение целинных и залежных земель)". It was a large-scale campaign to increase grain production by bringing vast tracts of virgin lands into agricultural use, carried out in the Soviet Union in 1954–1960. The ploughing up of new arable land was carried out mainly in the territory of the Kazakh SSR, as well as in the Volga region, the Urals, Siberia, the Far East and Crimea. It was implemented in territories exceeding 600,000 square kilometers. The project uniquely symbolized both sides of the Soviet Union's socialized agriculture – the advantages and shortcomings.

How did the idea behind the project crystallize?

The death of Joseph Stalin on 5 March 1953 ended three decades of uninterrupted rule in the Soviet Union. It was also an opportunity for other top-level party leaders – Nikita S. Khrushchev, Georgy M. Malenkov, Vyacheslav M. Molotov, and Clement E. Voroshilov among others – to take a fresh look at the prevailing issues of economic development and consider a new path for moving forward. This process was kickstarted on 3–7 September 1953 when the CPSU's Central Committee met in a plenary session (plenum) in Moscow. Such sessions were a forum for collective brainstorming by the top Soviet leadership to discuss contemporary issues and take measures to resolve them. The main agenda of the plenum was consideration of "Measures for the Further Development of Agriculture in the USSR (О мерах по дальнейшему развитию сельского хозяйства СССР).

The CPSU's Central Committee member Nikita Sergeievich Khrushchev presented a report on this issue to the plenum for discussion. In his report, Khrushchev made a critical assessment of the past methods and a realistic analysis of the state of affairs in the agriculture sector. In particular, the report noted that the population's needs for food products in the country were not being met. The plenum took several immediate measures to boost incentives for farm producers and improve management of agricultural farms.
The agricultural tax was reduced by 2.5 times; the size of household private plots was increased; procurement prices for agricultural products were increased; opportunities for the development of the collective farm market were expanded; approximately 20,000 mid-level party workers were sent to rural

areas to support the management of underperforming farms. However, the plenum skipped discussion of a pressing issue – shortfall of domestic grain production to meet people's demand for food. The plenum ended on September 7 by electing N. S. Khrushchev as First Secretary of the CPSU Central Committee. By occupying the top post of the ruling party, Khrushchev became the country's leader.

With the new Soviet leadership in place, the grain shortage issue was followed up by the Agriculture Ministries of the RSFSR as well as the USSR. RSFSR's Agriculture Minister P.P. Lobanov prepared a proposal "On increasing grain production through the cultivation of new lands" and sent it to CPSU First Secretary Nikita S. Khrushchev on 30 November, 1953. It stated that the republic's collective farms had 57.6 million hectares of land suitable for development, of which the most suitable 38 million hectares were in the Volga region, the Urals, Siberia, and the Far East, where 5 million hectares could be ploughed up and sown as early as 1954–1955. An additional 16 million hectares of undeveloped land were located on state farms. According to Lobanov's calculations, who was also an economist and member of the Agricultural Science Academy, VasKHNIL, an additional 6–7 million tonnes of grain can be obtained from the developed lands in the coming years, with an average yield of 1.3 – 1.4 tonnes per hectare.

Similarly, the USSR Minister of Agriculture I. A. Benediktov prepared another proposal titled "On increasing grain production on collective farms by ploughing fallow lands, virgin lands, low-productive meadows and pastures to expand the area under grain crops" and sent it to N.S. Khrushchev on 4 December 1953. This proposal attributed the grain shortage to low crop yields and the reduction of crop areas in favor of pastures. The Minister proposed expanding the area under grain and forage grasses by developing 30 million hectares of uncultivated land. This land was available on collective and state farms, primarily in areas that did not require expensive land reclamation—in the Volga region, the Urals, Siberia, and Kazakhstan.

This proposal envisaged bringing 12 million hectares into agricultural use, with grain being sown only in the first three years, and then include other crops in the crop rotation. To achieve this goal, the minister proposed reorganizing the existing farm mechanization network – Machine Tractor Stations (MTS) – and creating new ones. It also considered providing incentives to the farms participating in this programme, including exempting them from mandatory state deliveries. Minister Benediktov estimated that his proposal could result in an additional grain harvest of 8–9 million tonnes, and by 1960, 14–16 million tonnes[1].

Both ministers' proposals were of purely technical nature and realistic. They charted the route to overcome shortfalls of grain production by maximizing the use of existing resources without resorting to expensive new investments. They considered expanding cropped areas by bringing into production cycle uncultivated land in the country's existing collective as well as state farms. These lands didn't require

---

[1] *Спицын, Евгений Юрьевич.* Хрущёвская слякоть. Советская держава в 1953-1964 годах. — Книга для учителей, преподавателей и студентов. — Москва: Концептуал, 2020. — С. 308—318. — 592 с. — ISBN 978-5-907172-63-0.

expensive investments for upgrading into cultivable land. Besides the agriculture ministers and other concerned specialists, the Soviet leader N.S. Khrushchev did his own brainstorming on how to resolve the vexing grain production shortage issue. He was essentially looking for a quick fix ignoring valid economic and ecological tradeoffs inherent in such an approach. Khrushchev, based on his own thinking and calculations of benefits and costs, prepared his own report "Пути решения зерновой проблемы (Ways to Solve the Grain Problem). " In his report, Khrushchev proposed ploughing up 13 million hectares of virgin and fallow land. He set the expected grain yield level from these lands at 1.4-1.5 tonnes per hectare and calculated the gross production of grain at 18.0–19.7 million tonnes, of which 13.1–14.7 million tonnes would be commercial grain. The expected yield levels were too ambitious. At that time, the average wheat yield in the United States was 1.22 t/ha and in the USSR it was 0.7–0.8 t/ha. Khrushchev essentially considered doubling the yield levels with the assumption that the natural fertility of the soils which were not opened up for cultivation for a long period would be enough to reach that level of yield. He also justified his proposal by citing the fact that the country received less grain in 1953 than in 1940. He linked the grain shortage to low yields and the reduction of cultivated land in favor of pastures (See citation 3).

On 22 January 1954, Khrushchev sent his report to the Presidium of the CPSU Central Committee. He annexed two previous documents to it. He also attached notes from the Deputy Chairman of the State Planning Committee of the USSR S. F. Demidov, Minister of Procurement of the USSR L. R. Korniets, Ministers of State Farms of the USSR and RSFSR A. I. Kozlov and T. A. Yurkin. Observations from T.D. Lysenko, President of VasKHNIL was also attached. In all the attached materials, there was support for the idea of virgin land development, but they also contained cautions from experts about the need to take into account the environmental factor –the ploughing of virgin steppe lands should be carried out only under strictly defined conditions. None of the authors had any doubts that the natural fertility of these lands could be exploited for only a few years in a row, after which the land should be given a rest, focusing primarily on special agricultural techniques, and the rate of further ploughing of new lands should be significantly scaled down[2].

Based on all these documents, the CPSU Central Committee Secretary in charge of this issue prepared a draft resolution. It considered a much more ambitious plan for virgin land development. In just two years, the target for developing virgin lands was set at 13 million hectares. The expectation was to harvest 18–19 million tonnes of grain from these new lands including 13–14 million tons of commercial grain with a yield of 1.4–1.5 tonnes per hectare[3]. The draft resolution contained elements that were significantly different from the assumptions of the Ministers of Agriculture of the USSR and the RSFSR. It considered higher rates and shorter timeframes for ploughing new lands. The share of fallow and grass-seeded lands (conservation agriculture techniques) on new lands was reduced in favour of increased yields through utilizing mineral fertilizers. No incentives were considered for collective farms.

---

[2] Зеленин И. Е. Указ. соч. С. 87; Никонов А. А. Указ. соч. С. 306–307.
[3] https://ru.wikipedia.org/wiki/

State farms were given priority over collective farms for cultivating virgin lands[4] because it allowed the government's direct control of farming operations.

On January 25, 1954, the Presidium of the Central Committee of the CPSU took up the issue for consideration. During the discussions, such a controversial proposal naturally provoked conflicting opinions and statements. A particularly heated debate erupted when members of the delegation to the Central Committee of the Communist Party of Kazakhstan began to actively object to the project. They cited the lack of transportation and production infrastructure in the areas of future virgin land development, as well as the housing shortage. Their arguments were also based on the fact that the mass cultivation of virgin lands in their republic would run counter to the interests of the indigenous population, who traditionally use these lands as grazing grounds for livestock.
To justify its objection, the Kazakhstan delegation presented its local soil map. It showed that not all of the designated lands were arable. The Kazakhs warned that serious environmental disasters were highly likely in the future—the emergence of dust storms, the disappearance of arable soil over vast areas, and, in Kalmykia and the Lower Volga region, the emergence of the first deserts on the European continent. Khrushchev countered all of these arguments as politically immature. He called the idea of the damage caused by ploughing virgin lands downright backward[5].

There was also objection to the project by a group of scientists led by Professor M. G. Chizhevsky, who specialized in the problems of dryland agriculture. They voiced sharp criticism of certain aspects of the virgin lands development programme, citing the previous unfortunate experience of Zernotrest, whose state farms had carried out haphazard sowing in dryland areas, resulting in dense thickets of weeds that were extremely difficult to control. And again, they sounded a warning: only the proper implementation of crop rotation, grass seeding, and the combination of grain production and livestock farming from the very beginning of virgin lands development would help prevent weed infestation.

Central Committee members G. M. Malenkov, V. M. Molotov and K. E. Voroshilov proposed directing the flow of resources to the restoration of existing arable lands and war-ravaged farms in the central and northwestern regions of the RSFSR. The Minister of Foreign Affairs, V. M. Molotov proved to be a serious opponent. He doubted the rationality of taking the economic risk – diverting resources from those regions that had long produced grain in favour of new ones where grain had never been grown and it was not known whether it would grow there.

However, the development of virgin lands received the support of the majority. Following deliberations, the Presidium of the Central Committee of the CPSU adopted a decision on the development of virgin lands in Kazakhstan, the Volga region, Siberia, the Urals, and the Far East. To endorse this decision in a

---

[4] Зеленин И. Е. Целинная эпопея: разработка, принятие и осуществление первой Хрущёвской «сверхпрограммы» (сентябрь 1953 — начало 1960 гг.) // Отечественная история. — 1998. — № 4. — ISSN 0869-5687

[5] Никонов А. А. Указ. соч. С. 308.

larger gathering of the party leaders, as it was the traditional practice, the CPSU Central Committee held a plenary session on 23 February — 2 March 1954. Soviet leader N. S. Khrushchev delivered a report to the meeting. He justified his proposal for resolving the grain issue by citing the fact that in 1953 the country harvested less grain than in 1940. The plenum proclaimed the policy of developing virgin lands as the main policy in agriculture. It assumed that bringing new land under cultivation could yield 1.4–1.8 t/ha of grain and in advanced farms even 2.0–2.5 t/ha. On March 2, 1954, the Plenum of the Central Committee of the CPSU adopted a resolution "On the further increase of grain production in the country and on the development of virgin and fallow lands."

Many suspect that Nikita Khrushchev had a hidden political agenda in the design of the Virgin Lands development project. He wanted to create a big story of his own and thus stand out by his own achievements from the Stalinist era. He set focus on carrying out transformation in the virgin lands using a mobilizational approach, invoking patriotism and war-time spirits. A dream was crafted which was given the name "Целинная эпопея" meaning "Virgin land Epic". Enormous difficulties waited to be overcome to realize the dream. There was a destination in remote regions to be reached after traveling a long path full of challenges, which was equated as a frontline in a simulated assault on the virgin lands. It was given the name "Наступление на целину (Invasion of the Virgin Lands). Such an approach may seem absurd. But Khrushchev needed significant success to strengthen his position in the party and society. The Virgin Lands provided such an opportunity to demonstrate this.

Launching of the programme

Officially 2 March 1954 is accepted as the date for launching the Virgin and fallow lands programme. But preparations began as early as January 1954. The overall leadership of the programme was in the hands of the First Secretary of the CPSU Nikita S. Khrushchev. To lead the programme in Kazakhstan, an untested and risk-prone zone for grain farming, Khrushchev's choice fell upon one of his most trusted allies, Leonid Ilyich Brezhnev. Brezhnev was a staunch supporter of Khrushchev and actively supported his initiatives. After Stalin's death in 1953, Brezhnev, who had previously lost his influential position, was given a chance to rebuild his career thanks to Khrushchev's support. Khrushchev saw him as a reliable executor, ready to carry out assigned tasks without question[6].

In January 1954, Brezhnev was Deputy Head of the Main Political Directorate of the Soviet Army and Navy in the rank of Lieutenant General. Before being dispatched to Kazakhstan, he was elevated to the post of Second Secretary of the Communist Party of Kazakhstan (the second important decision maker for the republic) in February 1954. In this position he was entrusted with the overall responsibility for implementing the programme in all its dimensions.

---

[6] Рой Медведев, Политические портреты. Л. Брежнев. Ю. Андропов, https://www.livelib.ru/book/1003222144-politicheskie-portrety-l-brezhnev-yu-andropov-roj-medvedev

At that time the top party position in Kazakhstan was occupied by Panteleimon Kondratievich Ponomarenko who was removed a year later in August 1954 and L.I. Brezhnev became the First Secretary of the Communist Party of Kazakhstan. Khrushchev's plan set ambitious goals. It proposed to bring 13 million hectares of virgin and fallow land under cultivation in 1954–1955. Surprisingly, the first sowing season in the virgin lands surpassed expectations. Instead of the target of 13 million hectares to be cultivated in 1954, the total area of virgin and fallow lands brought under cultivation in the country reached 19 million ha. Kazakhstan also saw its share of sown virgin lands exceed the target. Overfulfillment of the target for sowing in 1954 boosted confidence of the authorities about the success of the project. They increased the real target for developing virgin land in 1955–1956 to 28–30 million hectares. Programme locations spread across vast geographical regions encompassing an area of about 1,300,000 square kilometers within the steppe and wooded-steppe regions of Western Siberia, northern Kazakhstan, and the southern Urals.

Leonid Ilyich Brezhnev in his book "Tselina"reminisces about the beginning and the scope of the project as follows:[7] "The great battle in the Kazakh steppes has begun. It unfolded over a vast geographic area. Northern Kazakhstan stretches 300 kilometers from west to east and 900 kilometers from north to south. The total area of the six current (previously there were five) regions located on its territory—Kostanaiski, Tselinogradski (formerly Anmolinsk), North Kazakhstanski, Kokchetavski, Turkmenski, and Pavlodarski—exceeds 600,000 square kilometers. This is much larger than the territory of a country like France. And on this vast expanse, 250,000 square meters of fertile steppe had to be ploughed up anew—an area greater than the entire country of England. It wasn't just us who cultivated virgin lands, but also the Altai Territory, Krasnoyarsk Region, Novosibirsk and Omsk Oblasts, the Volga region, the Urals, and the Far East. Many probably know that the total area of virgin and fallow lands developed in the country currently amounts to 42 million hectares. Of this, 25 million hectares have been ploughed up in Kazakhstan and 18 million hectares were cultivated in the Kazakh steppes in 1954 and 1955".

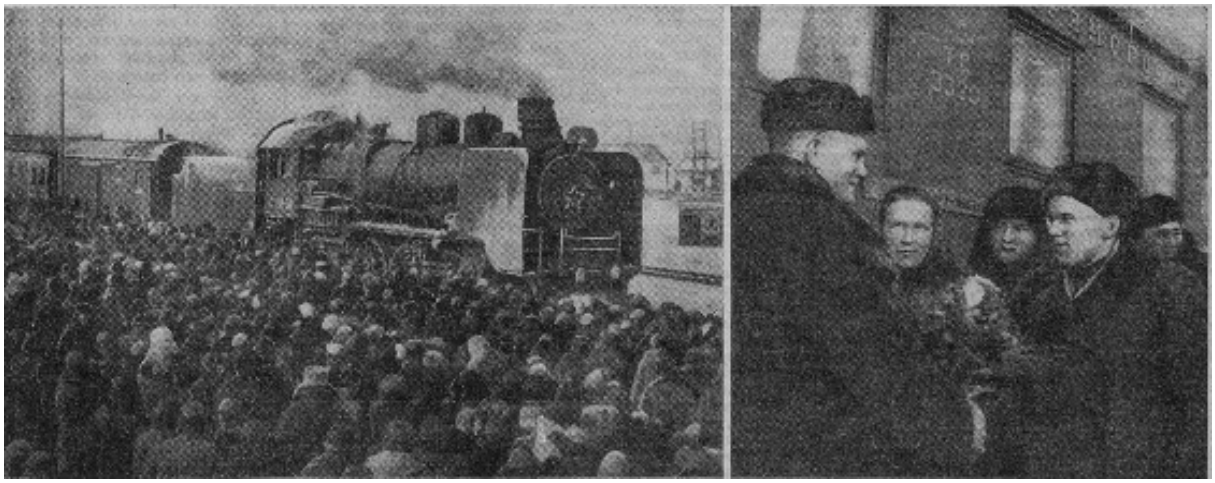
Agricultural farms in the Virgin Lands area and youth mobilization

Historically, the cultivation of the Virgin Lands is usually associated with Sovkhozes (state farms), but the role of Kolkhozes (collective farms) was far from secondary. While in Kazakhstan state farms played the main role in virgin lands development, in the Russian SFSR collective farms, at least till 1954–1956, played the lead role in implementing the programme. In the first year alone, in 1954, 90 new state farms were established. In 1956, this number reached 337. State farms were created later as well. These farms were created as large, highly mechanized grain production enterprises, each with 25,000–30,000 hectares of cultivated land. In Canada, a farm with 1,000-1,500 hectares of land is considered large, while a typical farm covers only 400 hectares.

The Soviet government relied heavily on mobilizing youth to implement its Virgin Lands programme. It was done with the help of Komsomol – the Communist Youth League. On 22 February 1954, the day before the Plenum of the CPSU Central Committee went into a week-long session to discuss and endorse

[7] Леонид Ильич Брежнев. 1980. Целина. Издательство политической литературы. Москва.

the programme, Komsomol activists of Moscow city and the Moscow region gathered in a meeting at the Kremlin Palace of Congresses. Top Soviet leaders including CPSU First Secretary, Nikita Khrushchev addressed the youth activists urging them to actively participate in this land development campaign. After the meeting was over, the first group of Komsomol-volunteers left for destinations in the Virgin Lands development region. The first group of Moscow Komsomol members arrived in the Virgin Lands of Kazakhstan on 2 March 1954 (shown in the photo)



More than 140,000 Komsomol members were sent to the Virgin Lands between late February and 20 April 1954 alone. This includes the first wave immediately after the Party resolution. Around 300,000 youth volunteers participated in the campaign during that year; in total, more than 500,000 young people were mobilized through Komsomol channels during the initial phase of the campaign[8]. In Kazakhstan alone, in 1954-1955, 20 thousand families from different regions of the USSR settled, numbering 40 thousand working-age people. The migrants included not only farmers, livestock herders, and machine operators, but also carpenters, joiners, and workers in other professions. Overall, Kazakhstan's population grew by 2 million people between 1954 and 1959[9].

Besides human resources, the government had to allocate enormous material and financial resources to make the “Virgin Land Epic” a success. Between 1954 and 1961, this nationwide project consumed 20 percent of all Soviet agricultural investments. This stagnated agricultural development in traditional farming regions, including the black soil regions of Ukraine, Russia, and the Non-Black Earth Region, which were particularly promising for increasing yields. The bulk of agricultural machinery produced in the USSR at that time was directed toward the virgin lands: 120,000 tractors, 10,000 combines, numerous tractor-driven plows, cultivators, seeders, and more. On the one hand, this concentration of new equipment yielded good results. In the first two years of development, 33 million hectares were ploughed up and sown instead of the planned 13 million hectares. By 1960, a total of approximately 42

[8] Kassym Akhat. 2019. Attraction of labor resources during the virgin land campaign. https://world-nan.kz/en/blogs/privlechenie-trudovykh-resursov-vo-vremya-tseliny?utm_

[9] О. М. Вербицкая, Целинный проект Н. С. Хрущева: взгляд из XXI в. https://rus-istoria.ru/component/k2/item/1486-tselinnyy-proekt-n-s-hruscheva-vzglyad-iz-xxi-v

million hectares of virgin land had been cultivated, instead of the planned 35 million. However, the development of virgin lands reduced the ability to replenish agricultural machinery in other regions of the country, which impacted labor productivity and crop yields in traditional farming regions.[10]

Justification of the Programme

In the early 1950s, foodgrain production in the Soviet Union was lagging behind the demand for consumption. There were many reasons. But crucially, arable land under foodgrain crops remained stagnant for many years. In his voluminous report to the twentieth congress of the CPSU held in February 1956, First Secretary N.S. Khrushchev noted when the demand for grain had increased significantly compared to pre-revolutionary times, almost the same areas were occupied by grain crops as in 1913.[11] The average grain yield in the country did not exceed 0.9 tonnes per hectare in 1953. For comparison, average wheat yield in the US then was almost double – 1.16 tonnes/ha. In 1953, the Soviet Union harvested 31 million tonnes of grain, but over 32 million tonnes were consumed for food[12]. The shortfall was met by releasing grain from the national reserve (Brezhnev, Tselina, 1980). This situation wasn't tenable for the Soviet leadership.

To resolve this issue, it was looking for radical and decisive measures, in particular urgent measures. During that period, increasing grain yield potential alone as a means for increasing grain production wasn't an option. So, the party leadership switched priority to expansion of arable land in significant amounts. And it was only possible by developing virgin lands in the eastern region (Brezhnev 1980). Khrushchev's estimate showed that the country could harvest an average of at least 32.8 million tonnes of grain annually from the new lands. With large quantities of commercial wheat from virgin lands, the state can confidently expand maize cultivation in Ukraine and the North Caucasus, allowing these regions to dramatically increase meat and milk production, as well as the production of industrial crops. Acknowledging the risks posed by frequent droughts to crop cultivation in North Kazakhstan, Siberia, and Ural, the Soviet leader used available data to show that grain farming in these areas was still profitable and economically viable.

Khrushchev's thinking was focused on immediate results from the New Lands. He didn't seem to care much about the future – stability and sustainability of crop agriculture in these lands. In his speech, Khrushchev set a timeline of five years for making investments and reaping the benefits from these investments. He assumed if out of five years there were only two good harvest years, one average and two poor harvest years, it was still possible to conduct grain farming profitably and obtain cheap grain

---

[10] Сергей Журавлев Целинная эпопея 20 февраля 2018, https://lhistory.ru/statyi/celinnaya-epopeya

[11] Газета Известия, № 39 (12037) 15 Февраля 1956 г. XX съезд Коммунистической партии Советского Союза, Отчетный доклад Центрального Комитета Коммунистической партии Советского Союза XX съезду партии. Доклад Первого секретаря ЦК КПСС товарища Н. С. ХРУЩЕВА,

[12] In 2023, the Russian Federation, a country about half the size of the Soviet Union but with Bolsheviks no longer in power, produced 92.8 million tonnes of wheat with an average yield of 2.023 t/ha becoming the top exporter of wheat to global markets. The corresponding figures for the US were 49.31 million tonnes and 3.269 t/ha

with relatively small costs required to grow grain crops under these conditions. But when the issue was debated, not everyone in the Soviet leadership was on board with Khrushchev's idea of grain farming in the Virgin lands region. Given the geographical expanse of the programme covering a territory of 600,000 square kilometers, they considered it absurd. From the beginning, there were disagreements about the feasibility of developing Kazakhstan's northern territories. The republic's leadership was against continuous ploughing on the steppe. Because of it the First Secretary of the Central Committee of the Communist Party of Kazakhstan, Zh. Shayakhmetov was removed from his post.

There was also disagreement among representatives of various groups of soil scientists. Those with better knowledge of local conditions – Director of the Institute of Soil Science of the Kazakh SSR U. U. Uspanov, Senior Researcher of the Institute of Soil Science N. P. Petelina, Head of the Soil Science Department of the Kazakh Institute of Agricultural Sciences S. P. Matusevich, Moscow scientists A. N. Rozanov, Letunov, and others – were more cautious in their recommendations. In general, the concerns of scientists were mainly driven by the challenges of grain farming in risk-prone dryland zones without adequate preparation in terms of appropriate machinery for tillage and soil conservation to be deployed in the programme areas. The main focus area of the project was the steppe of Northern Kazakhstan – a vast expanse of mostly grass-covered arid flat land exposed to harsh dry wind spells and sand storms where annual rainfall ranges from 200 mm to 300 mm. The only reliable source of soil moisture for crop growth is abundant snowfall.

But the development of virgin lands wasn't just about increasing grain production. The CPSU conceived it as a comprehensive territorial development programme. Leonid I. Brezhnev in his book "Tselina" described the scope of the programme as follows:

- By developing virgin and fallow lands, and also by increasing crop yields on old arable lands, make the grain industry the main branch of agriculture in Kazakhstan, and increase grain production here compared to the previous level;
- to develop and gradually implement on virgin lands a scientific farming system optimally adapted to the most difficult natural and climatic conditions with a focus on preserving and increasing the natural fertility of the local lands;
- By creating the largest grain state farms in the country, build everything necessary in each of them – both well-equipped production facilities and urban-type settlements with a full range of social, cultural, and household services. Completely reorganize, expand, and restructure all old state and collective farms in the republic according to the new farm model;
- In the shortest possible time, connect the territories of the virgin lands with a network of railways, highways, and inter-state farm roads; lay power lines, telegraph, telephone, and radio communications; build large grain elevators, factories for the production and repair of agricultural machinery, and dozens of other enterprises at key points—and thereby transform Northern Kazakhstan into a highly developed economic region, operating as a single economic organism;
- By increasing grain production and utilizing its waste, sharply increasing the sowing of forage crops, particularly corn, as well as increasing the yield of sown grasses and improving hayfields, radically strengthen the forage base and ensure the rapid development of livestock farming. In

the long term, the production of all types of products in this industry will increase by at least two times;

- In the south of the republic, using land reclamation, intensively develop rice cultivation, cotton growing, sugar beet growing, vegetable growing, horticulture, and viticulture.

First experience of field management on virgin lands

The soil in the steppe zone is fertile chernozem (black soil). Its formation is due to the vital activity of grass vegetation: every year, a huge mass of grasses dies, but in the steppe, the main organic matter is concentrated underground, in the form of a dense network of roots. Grass roots create a strong Sod —the top layer of soil, densely intertwined with living and dead roots, which protects it from erosion by wind and water. Tilling this type of land with conventional moldboard plows fitted to tractors wasn't easy. Leonid I. Brezhnev in his book "Tselina" remembers the experience of the first sowing season in 1954 as follows:

"The first spring on the virgin lands was remembered in many ways: joyful, solemn, and extremely intense, laborious. The steppe turned out to be a tough nut to crack, tougher than it had seemed at first. It's not just that the age-old Sod, permeated as if by a wire, was so dense that it barely yielded to the plough. And also, in the virgin lands of Kazakhstan, there is practically no spring in the usual sense. Winter immediately turns into summer. Heat sets in immediately after the melting snow, there's practically no rain in May, the soil dries quickly, becomes stony, and ploughing is doubly difficult.

(The first furrow)

The first furrows were laid everywhere solemnly, with rallies. But problems started coming up later. Tractor drivers noted that they had to stop more and more often: the motors couldn't pull the plows,

and the plow frames were breaking. Only a strong tractor like the S-80 could pull a five-furrow plow. But lightweight DT-54 and NATI tractors proved inadequate for virgin soil. Tractor operators everywhere began removing one or two plowshares[13]. This not only reduced the rate of soil preparation, but also threatened disrupting the plan for development of virgin lands.

Pre-sowing soil preparation of the newly ploughed land also wasn't easy. The field had to be disced several times, cultivated with paw-type cultivators, harrowed thoroughly, and treaded with water-filled rollers. Only then were the seeders put into operation. And the gap between lifting the soil and sowing shouldn't exceed four to five days. We knew that otherwise the field would dry out and seeding would be useless. To understand how these problems play out in the field, we visited one of the tractor brigades. We saw the machine operators were nervous; the work was going slowly, and no matter how hard they tried, the top layer wouldn't turn over completely. I approached the tractor drivers, started conversation, and asked what they thought could be done to overcome this issue. They replied that the existing plows were not fit for this job and that they needed new ones. I asked them what the new plough should look like. They replied we urgently need to establish production of plows with semi-screw and screw moldboards. Their suggestion was accepted and dedicated production lines for manufacturing this type of ploughs were organized within a month."

As the tempo of sowing in the new lands was picking up, farm managers were coming up with their own local innovations to do a better job of sowing. Leonid Brezhnev in his book "Tselina" describes one such instant. During a visit to a state farm, he was pleasantly surprised to see that the tractor drivers were driving their vehicles at normal speeds as if nothing had happened, and the ploughs were tearing up the virgin soil with a smooth, pleasant crunch and crackle. When Brezhnev asked the Director of the farm how they did it, he replied that the coulters were adjusted to seven centimeters depth and not eleven as recommended. As a result, it removes the very top of the sod and dumps it at the bottom of the furrow, truly "packing" it.

Then there were questions about field management techniques. A sensitive issue was the extent of fallows – the cropped land that local farmers in the steppe used to take out of cultivation as part of crop rotation. Fallows were considered as a basis of agriculture in the steppe. It is a vital natural soil fertility management practice by allowing the land to rest and restore fertility through natural processes. In 1940, before the virgin land development campaign began, fallow lands accounted for about 18 percent of the cropped area. Besides, there were also grass-covered lands in areas prone to wind erosion. Local farm managers insisted on adopting a longer-term crop rotation and introducing soil-stabilizing grasses. Otherwise, they warned, wind erosion in the region would be a nightmare, unlike anything seen before. To accommodate the valid concerns of the local farm producers with regard to soil protection, the field management practices were adjusted to allow 16 to 18 percent fallows.

---

[13] A plowshare is the working part of a plow (including a tractor plow) that comes into direct contact with the soil. Its main function is to cut and throw away the soil during plowing.

On the spot learning when confronted with challenges, forced programme management leaders to consider more conservation agriculture practices. For example, farm managers introduced kulis[14] crops, organized snow retention, and didn't lose sight of the fallows as measures to conserve moisture in the soil. The sowing time and sowing depth of wheat were also revised to make the best use of soil moisture accumulated in the soil. However, ploughing the land using the traditional moldboard plough stirred debate. Many farm managers with long experience of working locally considered it as the main enemy of steppe agriculture. Many felt the acute need for a different method of ploughing that disturbs the land as little as possible. But then it was only an idea on the steppe. Cultivation went ahead using conventional farm machinery and implements with local level innovations where possible.

The results of the Programme

Positive results

As has been stated above, "Development of virgin lands" was a resource-intensive muti-component territorial development project. Crop agriculture was at the centre of it. But it wasn't the only one. It was a part of the Soviet Union's ongoing socialist nation building in less developed areas utilizing the spin-off effects of implementing a large-scale agricultural project. Therefore, delivering unequivocal judgement on the outcome of the project is difficult. There were both positive and negative results because the trade-offs were not considered in economic and ecological appraisal of this programme. Short-term goals and political objectives prevailed over consideration of sensible alternatives that could lead to more sustainable results. The strategy considered in the programme for increasing foodgrain production was based on expanding the total cropped area. A significant chunk of this area, Northern Kazakhstan, was steppe – a vast expanse of treeless grassland with a risk-prone ecosystem exposed to dry windspells, sand storms and wind erosion of the fertile top soil. Widespread cultivation of the plains in the steppe began without the use of appropriate machinery and crop-land management practices to protect the fertile top soil, which was mostly Chernozem.

So, judged by the programme's contribution to increasing grain production, it was an extraordinary success surpassing all expectations. Particularly, the first years on the virgin lands proved to be highly productive. Before the mass development of the virgin lands, the average annual gross grain harvest in the country from 1949 to 1953 was 80.9 million tons, in 1954, it sharply increased to 85.5 million tonnes, including 27.1 million tonnes (31.7 percent of the total) in the Virgin lands. And in 1960, the USSR harvested 125 million tonnes of grain including 58.7 million tonnes in Virgin lands, which accounted for 47 percent of the total grain production.[15] In 1956, the yield of grain crops on collective

[14] Strips of tall-stemmed plants (sunflower, corn, mustard, etc.) sown in a fallow field (canopy fallow) among grain, vegetable, and other crops. They protect crops from drought and hot winds; when left in place over winter, they accumulate snow in the fields and prevent winter crops from freezing.

[15] https://ru.ruwiki.ru/wiki/ Дата обращения: 27 мая 2015. Архивировано 27 мая 2015 года.

farms in Western Siberia exceeded the 1953 level by 2 times (1.33 t/ha versus 0.62 t/ha). At the turn of the 1950s and 1960s, grain yields in virgin land regions dropped significantly: in collective and state farms in Western Siberia, they fell to 1.1 t/ha. In the regions of Northern Kazakhstan, instead of the expected 1.4 t/ha, the yield was 0.6 c/ha, in Southern Siberia 0.8 t/ha.

During the entire campaign, 41.8 million hectares of land were ploughed up. Owing to the increase in sown areas, the gross grain harvest in 1954–1958 amounted to 113 million tonnes per year, which was 1.4 times higher than the annual figures for the previous five years. Newly developed virgin lands accounted for more than 40 percent of all grain harvested in the Soviet Union during this period.

Ploughing up of the virgin lands continued until 1960. The expansion of cultivated land contributed to an increase in gross grain harvests and procurement by the government. By the mid-1950s, the rate of growth of grain production in Siberia exceeded the national average. In the Kazakh SSR, the figures were even higher. The volume of grain supplied to urban populations increased, leading to a reduction in its price. There were also spectacular achievements in social infrastructure building in Northern Kazakhstan and adjoining border areas with the Russian SFSR – large enterprises, housing, schools, hospitals, kindergartens, clubs, new roads, bridges, airfields, livestock buildings, grain elevators and warehouses.

According to scientists' calculations, to obtain this amount of grain in traditional farming areas, the country would have needed at least 10 years, whereas cultivation of virgin lands provided a significant increase in just 5 years. As a result, food supplies improved, and meat and milk production increased. In 1956, a year characterized by very favourable climatic conditions, virgin lands produced a record grain harvest of 127.6 million tonnes. Thanks to the development of virgin lands, their share in the total grain purchases in the USSR quickly increased: in 1958, the share of virgin land grain exceeded half of all harvests in the country (58%), in 1960 - even 62%, after which it began to decline sharply - to 45% (in 1961) and 37% (in 1963). Nevertheless, during the 1950s, when the USSR was experiencing a particularly acute food crisis due to underproduction of grain, the arrival of virgin land grain played a decisive role in supplying the population with food. It should be emphasized once again that in 1956–1958, virgin lands provided more than half of the grain harvested[16].

There were other studies to estimate the economic benefits from the investments made in the virgin lands. Academician A. A. Nikonov calculated, the state invested 37.4 billion rubles in its development from 1954 to 1959, while the state budget received approximately 62 billion rubles in commercial grain from the new regions alone, representing a net income of 24 billion[17].

Leonid I. Brezhnev, in his book “Tselina” provided economic justification of the project for Kazakhstan as follows: The development of virgin lands in Kazakhstan was not only the largest, but also the most economically profitable (Brezhnev, 1980). According to his estimates, Kazakhstan had sold more than

---

[16] Страна Советов за 50 лет: Стат. сб. М., 1972. С. 138–139; Советское крестьянство. Краткий очерк истории (1917–1969). М., 1970. С. 400.
[17] Никонов А. А. Указ. соч. С. 30.

250 million tonnes of grain to the state over the past twenty-four years. At the same time, from 1954 to 1977, all expenditures on agriculture in the republic— for the entire industry, and not just for virgin lands—amounted to 21.1 billion rubles. And the turnover tax from the sale of wheat over these years amounted to 27.2 billion rubles, meaning the country received 6.1 billion rubles in net profit. It should be kept in mind that the total value of fixed and working capital in Kazakhstan's collective and state farms today amounts to 15 billion rubles. Thus, all the labor and expenses were realized in the shortest possible time and yielded a profit.

The development of virgin lands allowed for a rapid and significant replenishment of the country's grain reserves. Initially, virgin land harvests exceeded all expectations. In the second half of the 1950s, they produced half of all grain grown in the USSR. In 1960, the USSR harvested 125.5 million tons of grain, 58.7 million tons of which came from virgin lands. In subsequent years, the yield of virgin lands declined slightly, to 25-40% of the country's grain harvest.

Another key result of the "virgin lands epic," which is probably impossible to quantify in monetary terms, was the economic development of previously uninhabited territories. New settlements emerged there, and over time, housing, roads, social and cultural facilities, and other infrastructure were built. In total, approximately 6 million people settled in the virgin lands.

Negative outcomes

Many of the negative outcomes of the New Lands project were rooted in the choice of the steppe grasslands of Northern Kazakhstan, Siberia and other regions for grain production. The climate in the virgin lands was not ideal for grain farming. These territories were considered risk-prone agricultural zones with harsh climatic conditions. The climate was sharply continental with insufficient rainfall, which increased the risk of drought. Frequent droughts in some years significantly reduced crop yields. Dry winds and dust storms triggered soil erosion and the destruction of crops. Monocropping of the same crop, which was spring wheat, for 5-6 years without applying mineral fertilizers led to soil depletion. Ecological vulnerability of grain cropping in the virgin lands was significantly exacerbated by rapid, large-scale cultivation methods and policy choices that neglected long-term sustainability. Particularly pressure for immediate results severely eroded the basis of sustainability. In addition to climatic factors, the efficiency of grain farming was also affected by other problems: lack of infrastructure (roads, grain storage facilities), shortage of qualified personnel, monoculture of wheat, which led to contamination of crops by weeds, and others.
The Soviet leadership’s goal to achieve perpetual self-sufficiency in foodgrains wasn’t materialized. All concerns that the scientists expressed during the design of the project were in full display. Natural fertility of top soil was overexploited, it was not replenished by mineral fertilizers. Ploughing the land with traditional moldboard plough exposed the soil to wind erosion. As a result, productive capacity of Virgin Land soils was gradually exhausted, triggering decline of grain yields after 1960. In 1963, the Soviet Union again confronted foodgrain shortages and had to resort, for the first time, to large-scale

imports of wheat from Canada and Australia. The Table below illustrates the trend of average grain yields in the Virgin Lands in North Kazakhstan during 1954–1965.

Year	Average grain yield in Northern Kazakhstan (t/ha)	Average wheat yield in the US (t/ha)
1954	0.93	1.22
1955	0.28	1.33
1956	1.14	1.36
1957	0.43	1.47
1958	0.9	1.85
1959	0.92	1.45
1960	0.85	1.76
1961	0.68	1.61
1962	0.59	1.68
1963	0.3	1.69
1964	1.02	1.74
1965	0.27	1.77

The characteristic feature of average grain yields in the Virgin Lands, as evident from the Table, was wide year-to-year fluctuation. It reflected the high vulnerability of grain yields to environmental conditions defined by rainfall patterns, status of conserved soil moisture, average temperatures, and occurrences of extreme weather events, such as droughts and dust storms. There was little use of protective technologies and cultivation practices to cushion the impact of adverse weather during the crop growing season. Between 1954 and 1958, grain yields were still reasonable, varying from 0.28 t/ha to 1.14 t/ha.

But beginning from 1959, a consistent decline of yield became evident, reaching as low as 0.3 t/ha in 1963. In comparison, average wheat yields in the US, despite annual variations, rose consistently from 1.22 t/ha to 1.77 t/ha during this period. To support the Virgin Lands cultivation programme with necessary material, financial and trained human resources, the Soviet Government didn't create extra capacities. Rather it redistributed its existing resources, draining them from the European parts of Russia, Ukraine, Byelorussia and even the Baltic republics. In short, a massive agriculture-cum-territorial development programme in far-flung areas came at the expense of depriving other regions of the country of resources for development.

As a result, agricultural development in traditional farming regions has stalled, including the black soil regions of Ukraine, Russia, and the Non-Black Earth Region, which are particularly promising in terms of increasing crop yields. Due to the development of virgin lands, the ability to replenish the fleet of agricultural machinery in other regions of the country was reduced, which affected labor productivity and crop yields in traditional agricultural regions.

As stated before the Virgin Lands project lacked scientific justification. Many agricultural specialists pointed out that alternative approaches of increasing grain production from traditional non-virgin lands weren't considered when the final decision on the project was taken. According to some scientists, there were almosr no truly virgin lands in the "virgin lands". These lands were fallow lands, which had been used before. But in a different way – they were sown once, harvested, and then left to rest for 5-7 years until they regained fertility. Khrushchev's pet project destroyed the grassland crop rotations that produced valuable feed for livestock. Many argued that these lands should not be touched. That global intervention in the relatively poor steppe soils would lead to their rapid depletion, degradation, and even dust storms. That there are protective technologies for using such lands, that ploughing up pastures will reduce the natural and very cheap forage base for livestock. But the leaders ignored the valid concerns of scientists.[18]

When the positive results are weighed against the negative outcomes, the picture that emerges is one of high hopes dashed by harsh realities. Nikita Khrushchev looked for quick-fix measures to solve the vexing issue of grain shortages that had long eluded a durable solution. His choice delivered short-term gains in grain production but failed to provide long-term solutions to food security based on self-sufficiency in foodgrains. Because it was a high-risk agricultural strategy. In other contexts, it would have been tested on a pilot scale to learn lessons before expanding on a larger scale. But the Soviet leader pressed ahead with implementing the project in all areas simultaneously. Scientific-technical measures to address the anticipated climatic risks were virtually non-existent. As a result, gains in grain production were impressive for a short-period. They weren't stable nor sustainable that invalidated the approach as a reliable strategy for increasing grain production. The grain crisis of 1963 led to quick winding up of the Virgin Lands programme and reduction of newly ploughed up areas. The Virgin Lands campaign formally ended on 26 March 1965 when the Plenum of the CPSU Central Committee adopted a resolution " On urgent measures for the further development of agriculture in the USSR.

Conclusion

Saying that the Virgin Lands Development Programme was purely adventurist and a waste of enormous resources probably won't do justice to its architect, Nikita S. Khrushchev. The programme, as we discussed in the foregoing, was a comprehensive territorial development programme. The core component was ploughing up of new and unused lands in the grasslands and wooded grasslands of

---

[18] Алексей Овчинников : Хрущевская целина помогла Казахстану, но обескровила центр России Рекордные урожаи были только три года, а потом Советскому Союзу пришлось закупать зерно за границей, https://www.kp.ru/daily/, 12 Мая 2019

Northern Kazakhstan, Western and Eastern Siberia, Urals and the Volga basin for expansion of grain farming. That this region wasn't ideal for grain farming because of climatic constraints wasn't unknown to the Soviet leaders.

They were quite aware that it was going to be a high-risk agricultural strategy, but nonetheless they took the risk. Their priority was immediate short-term gains in grain production to solve the urgent problem of food shortages. The political calculation was based on harvesting as much grain as possible by utilizing natural fertility of the virgin lands accumulated over many years and in the process learn and do things to address climatic constraints. In short, it was a strategy of buying time to prepare the ground for transition to intensification based on increasing grain yield potential.
By that measure the strategy worked as expected. The Soviet Union didn't have grain shortages over the period 1954–1960. A number of cost-benefit analyses of the programme have shown the economic effectiveness of the programme. All the investments made in the programme were fully recouped with handsome returns. So, despite significant environmental costs, the project's contribution to food security can't be ignored.

But the lack of sustainability of grain farming was only part of a grandiose event. It could not have vanished into history without a trace. Its echo still reverberates in Russia, Kazakhstan and elsewhere in the former Soviet Union. It touched the lives of hundreds of young people, where they realized their dream of finding success as well as happiness in life. By concentrating enormous material, technical and human resources the Virgin Lands Development programme stimulated rapid industrial, infrastructure and urban development of the entire region. Many new factories and industrial enterprises were built. New universities, technical schools, and colleges specializing in agriculture were opened. Numerous new highways and railways were built, and communication systems were improved. Kazakh SSR, now Independent Kazakhstan, particularly benefitted from the project with the emergence of the modern grain industry. That today's Kazakhstan is a leading global producer and exporter of wheat owes its beginning to the Virgin Lands Development Programme.

The Virgin Lands Programme left valuable lessons for the governments that make political choices in decision making regarding investments in agriculture as well as the scientific and the concerned farming communities. The project highlighted the need to consider appropriate tillage, soil conservation and fertility management technologies and disaster risk reduction strategies in the design of large agricultural projects in risk-prone geographical regions.